

IN THE DRAWINGS

Please amend FIGS. 3, 4, 5, 6 and 7 as set out in the replacement sheets attached hereto.

REMARKS

Objections to the Drawings

The Examiner has objected to the drawings for using duplicate reference numbers for different parts.

Figures 3 and 4 have been amended to apply reference character 57 to the Chassis.

Figures 5 and 6 have been amended to apply reference character 67 to the flange structure.

Figure 7 has also been amended to apply reference character 53 to the backlit diffusion screen, which is consistent with Figures 5 and 6.

Amendments to the Specification

The specification has also been amended to be consistent with the amended drawings. The amendments do not constitute new matter.

Section 112 Claim Rejections

Claim 27 has been rejected for lacking antecedent basis as to the term “the refractive index of the LED material.” The present amendment revises the claim so that all elements recited have antecedent basis in the claims.

Section 103 Claim Rejections

Independent claim 1 and its dependent claims 2-27, have been rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,984,477 to Weissman et al. in argued combination with U.S. Pub. No. 2003/0219207 to Guy and U.S. Patent No. 5,673,059 to Zavracky et al., and various features in the dependent claims further in view of U.S. Patent No. 3,825,336 to Reynolds, U.S. Patent No. 4,859,031 to Berman et al., U.S. Patent No. 5,719,588 to Johnson, U.S. Patent No. 6,724,354 to Spitzer et al., and U.S. Patent No. 4,170,399 to Hansen et al.

Independent claim 1 as amended recites a display apparatus having a support structure supported on the head of a user. The structure supports a viewing portion facing one of the eyes of the user and a housing. The housing supports an image display system having an LED generating light and a first plastic optical fiber bonded to the LED. The optical fiber receives light from the LED, and a reflective display receives image data and forms an image therefrom. The optical fiber transmits the light to the reflective display so that the light received from the LED is reflected by the reflective display to project the image. The LED, the first plastic optical fiber, and the reflective display are all supported in the housing. The support structure further supports optics receiving the projected image from the reflective display and transmitting the image to the viewing portion so as to be viewed by the user.

The claimed apparatus is particularly efficient in terms of weight that must be supported on the head of the user, and the effect of this weight and the connections to the display system on the ease of movement of the viewer's head. As described in the present

application, plastic fiber optic fibers can be bent into a small radius of curvature. See Specification, Page 11, Lines 14-17. This allows for a very compact arrangement of the fibers in the housing, thereby reducing the overall volume of the apparatus supported on the user's head. This is not suggested by the prior art.

The display apparatus of present independent claim 1 is not suggested by any of the cited prior art, none of which affords the benefits of the claimed invention, and reconsideration of the rejection thereof is respectfully requested.

Weissman et al. discloses a helmet mounted display system in which light from a lamp is focused through a series of lenses and projected onto a rear projection screen. Weissman, Col. 2, lines 22-30. The light source in Weissman is identified only as a lamp, and no mention or suggestion of LEDs is made. Id. Furthermore, Weissman does not remotely suggest the combination of a lamp in a head supported housing with a plastic optical fiber. Weissman shows only fiber optic cable supplying light to a lens assembly from a remote housing, or a vaguely described lamp with no fiber optic connection. See Weissman, Col. 2, lines 22-30, and Figure 2 of Weissman.

Guy teaches an illumination system in which an optical fiber is either placed next to or bonded directly to the light emitting surface of an LED. See Guy, Paragraph 23. However, Guy does not teach or suggest using plastic optical fibers, nor does it suggest applicability to a helmet mounted display.

In fact, the structure of Guy cannot be readily used with a plastic optical fiber. The heat generated by an LED at its light-emitting surface would melt a plastic optical fiber.

The Examiner also cites to Zavracky for disclosing the use of LEDs as light sources in a helmet mounted display system. However, Zavracky also fails to teach or suggest using plastic optical fibers bonded to an LED, and does not suggest a housing supporting an LED with a plastic optical fiber bonded to it.

Therefore, Weissman, Guy and Zavracky, either alone or in combination, all fail to suggest the apparatus as recited in claim 1, and reconsideration of the rejection thereof is respectfully requested.

Reynolds, Berman et al., Johnson, Spitzer et al., and Hansen et al. have only been cited for disclosing dependent features and do not impact upon the patentability of independent claim 1.

Dependent Claims

All of the other claims depend either directly or indirectly from Independent Claim 1, and therefore distinguish therewith over the prior art.

Especially noteworthy in the dependent claims are claims 25 and 27 to 31, which express a further combination that is even more clearly non-obvious. The combination in which an adhesive bonds the LED to the plastic optical fiber, as expressed in these

claims, is not suggested by any of the cited prior art. The adhesive insulates the LED thermally from the optical fiber, which inhibits melting of the plastic optical fiber.

Guy does not teach or suggest using an adhesive to bond the LED to an optical fiber. In contrast, Guy teaches placing the light guide 104 next to the light emitting surface 106 of the LED 102, or "bonding" the light emitting surface 106 of the LED directly to the light guide 104 using a plastic dome 114 and optical gel 120. See Guy, paragraph 20 and 23. This would lead to melting of the light guide if it were a plastic optical fiber.

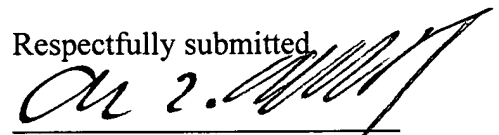
All claims having been shown to distinguish over the prior art in structure, function and result, formal allowance is respectfully requested.

Should any questions arise, the Patent Office is invited to telephone attorney for applicants at 212-490-3285.

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Respectfully submitted,


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